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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/529,060      | 03/24/2005  | Osamu Yogi           | 046124-5368         | 4361             |

55694 7590 01/23/2007  
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| EXAMINER |
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VO, ANH T N

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| ART UNIT | PAPER NUMBER |
|----------|--------------|

2861

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE  | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS                               | 01/23/2007 | PAPER         |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

# Office Action Summary

Application No.

10/529,060

Applicant(s)

YOGI ET AL.

Examiner

Anh T.N. Vo

Art Unit

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6, 7, 10, 11 and 14-16 is/are rejected.
- 7) ☒ Claim(s) 5, 8, 9, 12 and 13 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 9/1/06 10/12/05, 5/3/06.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

The references cited on PTO 1449 have been considered.

### ***Claim Objection***

Claim 4 and 10 are objected to because of the following informalities:

- In claim 4, on line 3, "apparatus" should be changed to -unit-- for consistent language.
- In claim 10, on line 5, --;-- should be added after "respectively".

Appropriate correction is required.

## **CLAIM REJECTIONS**

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this

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subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 14-15 are rejected under 35 USC 102 (b) as being anticipated by Hertz (US Pat. 4,346,387).

Hertz discloses in Figure 9 an ink jet recorder comprising a flat electrode (6) disposed opposite an ink nozzle (2); the ink nozzle (2) housing only an ink and an electrode (27) provided on the outer circumference of the nozzle (2); and a dilution nozzle (48) that houses only a dilute solution (43) and an electrode (16, 17) that is provided on the outer circumference of the dilution nozzle (48).

Claim 16 is rejected under 35 USC 102 (e) as being anticipated by Pui et al. (US Pat. 6,764,720).

Pui et al. disclose in Figure 2 an electrospraying dispensing device comprising a nozzle (59) which houses a single raw material liquid (77), wherein an electrode (56) is provided on the outer circumference of the front end of the nozzle (59).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior arts are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 6-7 and 10-11 are rejected under 35 USC 103 (a) as being unpatentable by Hertz (US Pat. 4,346,387) in view of Yogi et al. (US Pat. 6,811,090).

Note: The method steps are inherently taught in the apparatus device/limitations in the rejections as follow:

Hertz discloses in Figures 1-9 an ink jet recorder comprising:

- a droplet (3) of the mixed liquid formed on a droplet forming object (Figure 9, column 10, lines 64-68 and column 11, lines 1-28).
- a plurality of nozzles (2, 48) that house a plurality of raw material liquids (a first liquid that contains in nozzle 2 and a second liquid 43 that contains in a nozzle 48) and discharge the plurality of raw material liquids independently from each other (Figure 9);
- a flat electrode (6) disposed opposite the front ends of the plurality of nozzles (2, 48) (Figure 9); and
- an electrode (27) provided on the outer circumference of the nozzle (2) (Figure 9).

However, Hertz do not disclose a voltage applying unit that applies a voltage between raw material liquid housed in the nozzle and the flat electrode; and a control unit that controls the voltage applying unit so that a voltage is applied to a raw material liquid.

Nevertheless, Yogi et al. disclose in Figure 2 a minute droplet forming apparatus comprising:

- a voltage applying unit (10) that applies a voltage between raw material liquid (2) housed in the nozzle (1) and the flat electrode (5); and
- a control unit (11) that controls the voltage applying unit (10) so that a voltage is applied to an raw material liquid (2).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the teaching of Yogi et al. in the Hertz ink jet recorder for the purpose of providing a control unit for controlling the pulse power supply.

***Allowable Subject Matter***

Claim 5 would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims. This claim would be allowable because the prior art references of record fail to suggest a mixed liquid droplet forming apparatus comprising an electrode that is provided on the outer circumference of at least one nozzle of the plurality of nozzles, and a control unit controls a voltage applying unit so that the electrode is supplied with a potential equal to or higher than the potential of the raw material liquid in the combination as claimed.

Claim 8 would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims. This claim would be allowable because the prior art references of record fail to suggest an ink jet printing method comprising, after the second step, a step in which the chroma of a droplet is measured, and based on the measured chroma, the quantity of discharging the ink or the dilute solution is controlled so that the chroma of the droplet becomes a desired chroma in the combination as claimed.

Claim 9 would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims. This claim would be allowable because the prior art references of record fail to suggest an ink jet printing method comprising, wherein in a first step, an electrode that is provided on the outer circumference of a dilution nozzle and the electrode is supplied with a potential equal to or higher than the potential of the dilute solution inside the dilution nozzle in the combination as claimed.

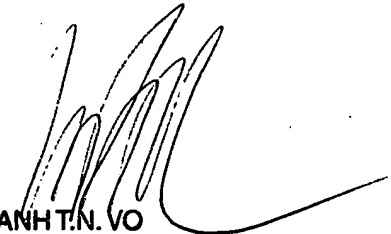
Claim 12 would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims. This claim would be allowable because the prior art references of record fail to suggest an ink jet printing apparatus for printing a color image on a printing object by using a plurality of inks comprising an electrode that is provided on the outer circumference of a dilution nozzle, and a control unit controls a voltage applying unit so that the electrode is supplied with a potential equal to or higher than the potential of the dilute solution in the combination as claimed.

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Claim 13 would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims. This claim would be allowable because the prior art references of record fail to suggest to suggest an ink jet printing apparatus for printing a color image on a printing object by using a plurality of inks comprising an illuminating light source which illuminates a droplet formed on a printing object; and a chroma measuring unit which measures a chroma of a droplet illuminated by the illuminating light source, wherein a control unit controls a voltage applying unit based on the chroma of the droplet measured by the chroma measuring unit so that the chroma of the droplet becomes a desired chroma and adjusts the quantity of discharging the ink or the dilute solution in the combination as claimed.

### ***CONCLUSION***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Anh Vo whose telephone number is (571) 272-2262. The examiner can normally be reached on Tuesday to Friday from 9:00 A.M. to 7:00 P.M.. The fax number of this Group 2861 is (571) 273-8300.

  
ANH T.N. VO  
PRIMARY EXAMINER  
January 12, 2007